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10/615,171Amendments to the Claims

1. (currently amended): A high frequency integrated circuit structure comprising:
 - a body of semiconductor material having a plurality of isolated active regions, and comprising a first conductivity type;
 - internal circuitry formed in a first active region;
a second active region comprising a buried layer of a second conductivity type formed over the body of
semiconductor material and a first semiconductor layer of
the second conductivity type formed over the buried layer,
wherein the first semiconductor layer has a lower dopant
concentration than the buried layer;
 - a first silicon controlled rectifier device formed in
[[a]] ~~the~~ second active region, the first silicon controlled
rectifier device comprising a ~~first doped region of a first~~
~~conductivity type,~~ a first well region of the first
conductivity type formed in the first semiconductor layer, a
~~first doped region of the first conductivity type formed in~~
~~the first well region, [[a]] the buried layer of a second~~
~~conductivity type, a second well region of the first~~
~~conductivity type formed in the first semiconductor layer~~
~~and spaced apart from the first well region, and a second~~
~~doped region of the second conductivity type formed in the~~
~~second well region; and~~
 - a second silicon controlled rectifier device comprising
~~a third doped region of the first conductivity type, the~~
~~second well region, a third doped region of the first~~
~~conductivity type formed in the second well region, the~~
buried layer, the first well region, and a fourth doped
region of the second conductivity type formed in the first
well region, wherein the first and second silicon controlled
rectifier devices are coupled to the internal circuitry and

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form an ESD structure for protecting the internal circuitry against positive and negative ESD stresses.

2. (currently amended): The high frequency integrated circuit structure of claim 1 wherein the body of semiconductor material comprises:

a semiconductor wafer having the first conductivity type; and

a first second semiconductor layer formed over the semiconductor wafer, wherein the first second semiconductor layer comprises the first conductivity type, and wherein the first second semiconductor layer has a lower dopant concentration than the semiconductor wafer, and wherein the buried layer is formed ~~over adjacent~~ the first second semiconductor layer, ~~+ and~~

~~a second semiconductor layer formed over the buried layer, wherein the second semiconductor layer comprises the second conductivity type and has a lower dopant concentration than the buried layer, and wherein the first and second wells are formed in the second semiconductor layer, and wherein the first and fourth doped regions are in the first well, and wherein second and third doped regions are in the second well.~~

3. (original): The high frequency integrated circuit device of claim 2 further comprising:

a first ohmic contact coupling the first and fourth doped regions; and

a second ohmic contact coupling the second and third doped regions.

4. (currently amended): The high frequency integrated circuit device of claim 2 further comprising a deep contact

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trench extending from a surface of the second first semiconductor layer into the semiconductor wafer.

5. (currently amended): The high frequency integrated circuit device of claim [[2]] 1 further comprising a field dielectric region formed on a surface of the second first semiconductor layer between the first and second wells.

6. (currently amended): The high frequency integrated circuit structure of claim 2, wherein the first second semiconductor layer has a dopant concentration of approximately 1.0×10^{13} atoms/cm³

7. (currently amended): the high frequency integrated circuit structure of claim 2, wherein the first second semiconductor layer has a thickness from about 1.5 microns to about 3.0 microns.

[[8]] 8. (currently amended): The high frequency integrated circuit structure of claim 1 further comprising a deep isolation trench formed in the ~~semiconductor substrate~~ body of semiconductor material for isolating the ESD structure from the internal circuitry, wherein the deep isolation trench includes a dielectric layer.

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9. (currently amended): A symmetrical SCR device comprising:

a semiconductor substrate of a first conductivity type;
a first semiconductor layer of the first conductivity
type formed over the semiconductor substrate, wherein the
first semiconductor layer has a lower dopant concentration
than the semiconductor substrate;

a ~~first~~ second semiconductor layer of a ~~first~~ second
conductivity type ~~formed adjacent the first semiconductor~~
layer;

a ~~second~~ third semiconductor layer of the ~~first~~ second
conductivity type formed over ~~adjacent~~ the ~~first~~ second
semiconductor layer, wherein the ~~second~~ third semiconductor
layer has a lower dopant concentration than the ~~first~~ second
semiconductor layer;

first and second wells comprising [[a]] ~~the~~ second
conductivity type formed in the ~~second~~ third semiconductor
layer, wherein the first and second wells are spaced apart;

first and second doped regions formed in the first
well, wherein the first doped region comprises the first
conductivity type and the second doped region comprises the
second conductivity type, and wherein the first and second
doped regions are electrically coupled; and

third and fourth doped regions formed in the second
well, wherein the third doped region comprises the first
conductivity type and the fourth doped region comprises the
second conductivity type, and wherein the third and fourth
doped regions are electrically coupled.

Claim 10 (cancelled).

11. (currently amended): The SCR device of claim
[[10]] 9 wherein the fourth ~~first~~ semiconductor layer has a

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dopant concentration of about 1.0×10^{13} atoms/cm³, and a thickness of about 1.5 to about 3.0 microns

12. (currently amended): The SCR device of claim [[10]] 9 further comprising a deep isolation trench extending from a surface of the ~~second~~ third semiconductor layer into the semiconductor substrate.

13. (currently amended): The SCR device of claim [[10]] 9 further comprising a deep contact trench extending from a surface of the third semiconductor layer into the first semiconductor substrate. layer.

14. (currently amended): The SCR device of claim 9 further comprising an isolation region formed on a surface of the ~~second~~ third semiconductor ~~region~~ layer between the first and second wells.

15. (currently amended): The SCR device of claim 9 wherein the first conductivity type comprises [[n-type]] p-type, and wherein the second conductivity type comprises [[p-type]] n-type.

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16. (withdrawn): A method for forming a high frequency SCR device including the steps of:

providing a semiconductor substrate including a first semiconductor layer of a first conductivity type, a second semiconductor layer of a second conductivity type over the first semiconductor layer, and a third semiconductor layer over the second semiconductor layer, wherein the third semiconductor layer comprises the second conductivity type, and wherein the third semiconductor layer has a lower dopant concentration than the second semiconductor layer;

forming first and second wells in the third semiconductor layer, wherein the first and second wells comprise the first conductivity type, and wherein the first and second wells are spaced apart;

forming first and second doped regions in the first well, wherein the first doped region comprises the first conductivity type, and the second doped region comprises the second conductivity type; and

forming third and fourth doped regions in the second well, wherein the third doped region comprises the first conductivity type, and wherein the fourth doped region comprises the second conductivity type.

17. (withdrawn): The method of claim 16 wherein the step of providing the semiconductor substrate includes providing a semiconductor substrate having a fourth semiconductor layer formed between the first semiconductor layer and the second semiconductor layer, wherein the fourth semiconductor layer comprises the first conductivity type, and wherein the fourth semiconductor layer has a lower dopant concentration than the first semiconductor layer.

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18. (withdrawn): The method of claim 16 further comprising the steps of:

forming an isolation region on a surface of the third semiconductor region between the first and second wells;

forming a first ohmic contact coupling the first and second doped regions; and

forming a second ohmic contact coupling the third and fourth doped regions.

19. (withdrawn): The method of claim 16 further comprising the step of forming a deep isolation trench that surrounds the high frequency SCR device, and that extends from a surface of the third semiconductor layer into the first semiconductor layer.

20. (withdrawn): The method of claim 16 further comprising the step of forming a deep contact trench extending from a surface of the third semiconductor layer into the first semiconductor layer.